

Remarks

Previously presented claims 62 and 66-83 have been amended, leaving claims 63-84 pending in the application. To address errors of a clerical nature, previously presented claim 62 has been renumbered as claim 66, and previously presented claims 66-83 have been renumbered respectively as claims 67-84.

Claims 62, 69, 78, 80, and 84 have been objected to as improper. As referenced above, these claims have been amended and, as amended, they are believed to be proper.

In addition, the Examiner has recommended an amendment to the record that includes changing the spelling of "frustrum" to "frustum". In order to facilitate prosecution of the application, Applicant has amended frustrum as recommended by the Examiner.

The drawings and the specification have also been objected to by the Examiner. In the first instance, the drawings have been objected to because they do not show every feature of the invention specified in the claims. Claim 63, for example, recites a cathode assembly that includes a plurality of silicon-comprising emitter tips with at least one of the emitter tips being substantially conical and comprising a tip portion supported by a frustum portion. Claim 63 further recites a coating over the tip portion with the coating not being along the frustum portion sidewalls. The Examiner has objected to the drawings because they do not show a coating over the tip portion with the coating not being along the frustum portion.

The Examiner is referred to pages 8-11 of the specification with specific reference to Figures 5 and 6. Referring to page 8 and Figure 5, for example, a low work function material is provided in an exemplary embodiment over apex regions 24 and over masking

layer 30. As an example, the specification continues by reciting that by selectively forming low work function material only against apexes 24 and not against base regions 22, the methodology of the present invention can avoid adversely affecting physical properties of base region 22 for the low work function material of layer 40. Potential adverse effects that could occur if low work function material 40 were provided against base region 22 include spurious electron emission from the base regions of emitters 20.

Referring to page 6, lines 14-19 of the specification, as well as the fourth full paragraph of the Remarks section of the response to the previous office action, base region 22 has been rephrased in the context of the disclosure provided by the Figures and specification as a frustum portion. This rephrasing does not constitute new matter as the mere rephrasing of a passage is allowable. With reference to Figure 5, apex or tip portion 24, for example, can have a coating 40 thereover with that coating not being along the frustum portion 22. As such, the drawings do not require correction as they support what is presently claimed.

Likewise, the specification has been objected to for at least the reason that the Examiner believes that the frustum portion has not been disclosed in the specification. As recited in the previous office action response and recited herein, with reference to the drawings, the frustum portion is disclosed with reference to Figure 5, for example. As such, the specification does not require amendment as it supports the present claims.

Claims 63, 64, and newly numbered claims 73-77 and 78-80 stand rejected under 35 U.S.C. §102(b) as being anticipated by Jones (U.S. Patent 5,619,097). Applicant requests reconsideration of this rejection in light of the following arguments.

As Applicant understands the Examiner's rejection, the Examiner directs Applicant to Figure 107 of Jones. With reference to the emitter tips 8 and base portions 13 disclosed in Figure 107 of Jones, the Examiner asserts that the base portion is a silicon frustum portion. However, base portion 13 of Jones is not conical as a frustum requires, but columnar. Therefore base portion 13 of Jones cannot be considered a frustum portion as base portion 13 of Jones does not have a conical shape. Therefore, for at least the reason that Jones does not teach or suggest all the elements of claim 63, claim 63 is allowable. Further, claim 63 is not obviated by any combination of Jones and Takemura as asserted by the Examiner, as neither Jones nor Takemura teach or suggest a coating over the tip portion with the coating not being along the frustum portion sidewalls as recited in claim 63.

Claims 64-77 depend from claim 63 and are allowable for at least the reasons cited above regarding claim 63.

Claim 78 recites material over the substrate and between at least two of the emitter tips with the material having an upper surface and edges contacting the frustum portion sidewall without contacting the tip portion sidewall wherein the entirety of the upper surface is exposed. Claim 78 is allowable for at least the reason that the cited references do not teach or suggest material having an upper surface and edges contacting the frustum portion sidewall without contacting the tip portion sidewall wherein the entirety of the upper surface is exposed. Referring again to Figure 107 as directed by the Examiner, Figure 107 depicts coating along the entirety of the sidewalls of any conical portion of emitter tip 8. As such, the cited references do not teach or suggest all the elements as recited in claim 78. Claims 79-84 depend from claim 78 and are allowable for at least the reasons cited above regarding claim 78.

Claims 63-84 are believed to be in immediate condition for allowance. Applicant requests allowance of claims 63-84 in the Examiner's next action. If the Examiner's next anticipated action is to be anything other than a Notice of Allowance, the Examiner is requested to contact the undersigned on (509) 624-4276 between the hours of 8 and 5 (PST).

Respectfully submitted,

Dated: _____

4/13/05

By: _____

Robert C. Hyta
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